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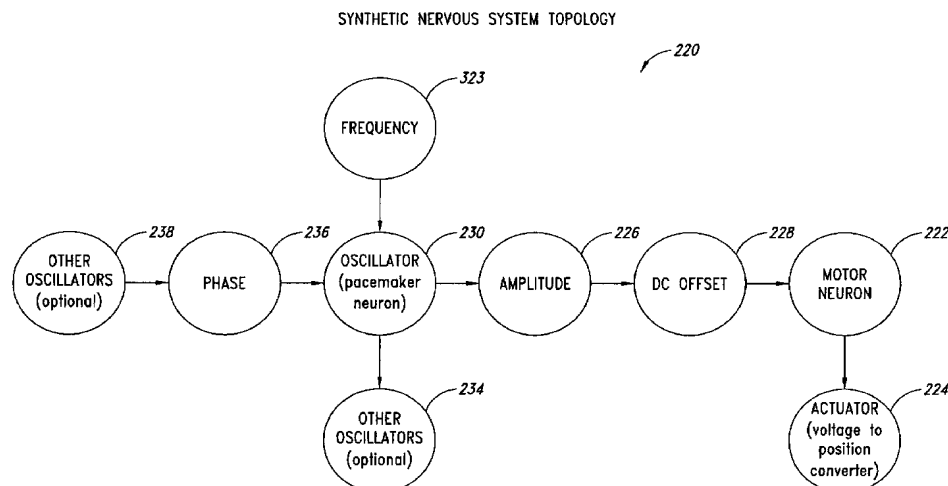
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(54) Title: SYNTHETIC NERVOUS SYSTEM FOR ROBOTICS



(57) Abstract: A synthetic nervous system (10) capable of rudimental learning and self-organization for robotic applications having a control circuit (190) and servo actuators (224) using oscillating continuously variable analog voltages to mimic natural bio-neural processes. Simple oscillators (1-8) capable of being modulated in frequency, phase, amplitude, and DC offset act as analog processing elements or oscillating infinite state machines. A central pattern generator (140) utilizing periodic, quasi-periodic, or chaotic oscillators or phase shifters, or a combination thereof, along with a basic motor neuron circuit (314) enables multiple servos to coordinate their behavior to enable bio-inspired locomotion such as walking, swimming, flapping, crawling, and the like. Sensors (200) interfaced to the control circuit (190) provide a wide range of adaptive behavior such as following a light source, avoiding an obstacle, and shifting balance point. Overlapping or concurrent sensor input can provide complex behavior with minimal circuitry.

WO 2005/072461 A3



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